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CONTENTS

Part 1. *January* 1954.

PAGE

Editorial 1

Dr. D. G. Avery. Further Measurements on the Optical Properties of Lead Sulphide, Selenide and Telluride 2

Dr. A. Many. Measurement of Minority Carrier Lifetime and Contact Injection Ratio on Transistor Materials 9

Mr. R. Lawrance. The Temperature Dependence of the Drift Mobility of Injected Holes in Germanium 18

Prof. L. F. Bates and Mr. D. Hughes. The Magnetic Susceptibility of Metallic Uranium 28

Mr. A. W. Simpson and Mr. R. H. Tredgold. Intrinsic Magnetization in Platinum Cobalt Alloys 38

Dr. W. Railston. The Temperature Decay Law of a Naturally Convected Air Stream 42

Dr. G. P. Rundle, Mr. J. Ellis, Dr. T. C. Griffith and Mr. H. S. Tomlinson. The Design and Operation of a Double Magnetic Lens Beta-Ray Spectrometer 52

Dr. L. E. Lawley. The Absorption of Sound in Carbon Dioxide contained in Narrow Tubes 65

Mr. A. W. Pryor and Dr. R. Roscoe. The Velocity and Absorption of Sound in Aqueous Sugar Solutions 70

Reviews of Books 82

Contents of Section A 88

Part 2. *February* 1954.

Dr. A. S. Lodge and Dr. H. G. Howell. Friction of an Elastic Solid . . . 89

Dr. M. J. Dumbleton. Discontinuous Flow in Zinc Crystals and its Relationship to Strain Ageing 98

Dr. E. Pitts. The Application of Radiative Transfer Theory to Scattering Effects in Unexposed Photographic Emulsions 105

Mr. J. J. Benbow. The Dynamic Mechanical Properties of some Organic Glasses 120

Mr. D. G. Cole, Dr. P. Feltham and Mr. E. Gillam. On the Mechanism of Grain Growth in Metals, with Special Reference to Steel 131

Dr. R. C. Faust. The Determination of the Refractive Indices of Inhomogeneous Solids by Interference Microscopy 138

Miss Nora E. Hill. The Dielectric Relaxation of Polar Molecules in Solution . 149

Research Notes :

Dr. P. M. Davidson. A Note on the Formula for the Mobility of Electrons with Mean Free Path varying with Velocity 159

Dr. P. A. C. Mortier and ir. J. F. Roose. Velocity of Discharge Propagation in Self-Quenching Geiger–Müller Counters 161

Dr. G. C. Farnell. Scattering of Light in Photographic Emulsion Layers . 164

Reviews of Books 166

Contents of Section A 168

Part 3. *March* 1954.

Prof. F. A. Vick and Dr. C. A. Walley. Negative Ion Emission from Oxide-Coated Cathodes : I 169

Dr. W. Grattidge and Dr. A. A. Shepherd. Negative Ion Emission from Oxide-Coated Cathodes : II 177

Dr. T. J. Lewis. The Work Function of Irregular Metal Surfaces 187

Mr. J. J. Polling and Dr. A. Charlesby. Analysis of the Formation Current in Electrolytic Oxidation of Zirconium 201

17088

PAGE

Dr. F. Minozuma and Mr. H. Enomoto. The Mechanism and Distribution of Short Period Fading under Conditions of Ionospheric Turbulence . . 211
Mr. J. L. Monteith. Error and Accuracy in Thermocouple Psychrometry . 217
Dr. D. A. Bell. Statistics of a Population with Creation and Recombination Dependent on Existing Numbers 227
Mr. D. Brown. A Shearing Interferometer with Fixed Shear and Its Application to some Problems in the Testing of Astro-Optics 232
Dr. M. Cocks. The Effect of Compressive and Shearing Forces on the Surface Films present in Metallic Contacts 238
Dr. D. Tabor. Mohs's Hardness Scale—A Physical Interpretation . . . 249
Research Notes:
Mr. C. H. L. Goodman. Semiconducting Compounds and the Scale of Electronegativities 258
Mr. N. Louat and Mr. M. Hatherley. The Behaviour of Aluminium Deformed under Alternating Stresses 260
Dr. E. W. J. Mitchell and Mr. E. G. S. Paige. On the Formation of Colour Centres in Quartz 262
Letters to the Editor:
Mr. D. E. Weston. The Effect of Slip on Sound Propagation 265
Dr. F. E. Hoare and Mr. B. Yates. The Elastic Constants and Density of Palladium–Silver Alloys 266
Mr. J. A. Reynolds. A Method of Measuring the Dielectric Constant of Isotropic Powders 267
Dr. J. N. Hodgson. The Infra-Red Properties of Bismuth 269
Dr. B. V. Rollin and Mr. I. M. Templeton. Noise in Germanium Filaments at Very Low Frequencies 271
Reviews of Books 272
Corrigendum (P. M. Davidson) 279
Contents of Section A 280

Part 4. *April* 1954.

Mr. H. Mykura. Interference Microscopy at High Wedge Angles 281
Dr. B. T. M. Willis and Mr. H. P. Rooksby. Magnetic Transitions and Structural Changes in Hexagonal Manganese Compounds 290
Dr. D. Madoc Jones and Prof. E. A. Owen. Experimental Study of the Variation of the Degree of Order with Temperature in a Copper–Palladium Alloy . 297
Dr. M. V. Wilkes. A Table of Chapman's Grazing Incidence Integral $Ch(x, \chi)$. 304
Mr. J. Dyson and Dr. W. Hirst. The True Contact Area Between Solids . . 309
Dr. A. Powell. The Reduction of Choked Jet Noise 313
Mr. A. Lempicki and Mr. C. Wood. Observations on a Form of Breakdown in Germanium Diodes 328
Dr. F. C. Roesler and Mr. J. R. A. Pearson. Determination of Relaxation Spectra from Damping Measurements 338
Dr. J. L. Rogers and the late Prof. F. C. Chalklin. A Geiger Counter Vacuum Spectrometer and its Use for the Study of Soft X-Ray Lines. 348
Research Notes:
Dr. U. W. Arndt, Mr. W. A. Coates and Dr. A. R. Crathorn. A Gas-Flow X-Ray Diffraction Counter 357
Dr. Ajit Ram Verma. Interferometric Observation of Mosaic Structure on the (111) Face of a Single Crystal of Germanium 359
Mr. H. J. Goldsmid. On the Thermal and Electrical Conductivity of Semiconductors 360
Reviews of Books 364
Contents of Section A 368

Part 5. *May* 1954.

PAGE

Dr. S. WAGENER. Reactions between Oxide Cathodes and Gases at Very Low Pressures 369

Miss C. M. LOVETT. Some Measurements of the Electrical Conductivity, Thermoelectric Power and other Properties of the Coating in the Oxide-Coated Cathode 387

Mr. G. F. N. CALDERWOOD and Dr. E. W. J. MARDLES. Viscometry—The Meniscus Resistance in Capillary Flow of Liquids 395

Dr. J. ROLFE. A Micro-Method for the Measurement of Self-Diffusion Coefficients of Solutions 401

Mr. J. B. GUNN. Measurement of the Surface Properties of Germanium . . . 409

Dr. R. BECHMANN and Mrs. S. AYERS. Elastic and Piezoelectric Coefficients of Dipotassium Tartrate (DKT) 422

Dr. A. N. STROH. Constrictions and Jogs in Extended Dislocations 427

Research Notes:

Mr. J. MARRIOTT, Mr. R. THORBURN and Dr. J. D. CRAGGS. Negative Ion Formation in CCl_4 and $TiCl_4$ 437

Dr. P. N. DAYKIN and Mr. D. A. WRIGHT. Oxide Cathodes in Accelerating Fields 439

Letters to the Editor:

Dr. G. F. J. GARLICK and Dr. M. J. DUMBLETON. Phosphors Emitting Infra-Red Radiation 442

Reviews of Books 444

Contents of Section A 448

Part 6. *June* 1954.

Mr. J. DAIN and Mr. I. A. D. LEWIS. Adiabatic Theory of an Electron Gun for Crossed Field Devices 449

Prof. E. A. OWEN and Dr. D. MADOC JONES. Effect of Grain Size on the Crystal Structure of Cobalt 456

Prof. S. TOLANSKY and Mr. V. R. HOWES. Optical Studies of Ring Cracks on Glass 467

Prof. S. TOLANSKY and Dr. A. HALPERIN. Oriented Ring Cracks on Diamond . 473

Mr. F. L. WARBURTON. Variations in Normal Colour Vision in Relation to Practical Colour Matching 477

Dr. G. ECKER. Theory of the Positive Column 485

Research Notes:

Mr. D. A. RICHARDS. Newton's Rings of High Visibility 492

Letters to the Editor:

Prof. K. G. EMELÉUS. Dissociative Recombination at Surfaces 495

Dr. P. W. RANBY and Dr. S. T. HENDERSON. Cascade Excitation of Phosphors by Ultra-Violet Radiation 496

Dr. R. W. HOFFMAN, Mr. R. D. DANIELS and Prof. E. C. CRITTENDEN, Jr. The Cause of Stress in Evaporated Metal Films 497

Reviews of Books 501

Contents of Section A 512

Part 7. *July* 1954.

Dr. P. W. TREZONA. Additivity of Colour Equations: II 513

Dr. J. C. BURFOOT. Third-Order Aberrations of 'Doubly Symmetric' Systems . 523

Dr. C. G. WYNNE. The Primary Aberrations of Anamorphotic Lens Systems . 529

Dr. A. HALPERIN. The Formation of Trigons on Diamonds 538

Dr. G. ECKER and Prof. K. G. EMELÉUS. Cathode Sputtering in Glow Discharges . 546

Dr. H. A. WHALE. A Rotating Interferometer for the Measurement of the Directions of Arrival of Short Radio Waves 553

PAGE

Mr. C. Rubenstein. The Influence of Creep on the Measured Hardness of Soft Metals . . . 563
Dr. G. Black. Ray Tracing on the Manchester University Electronic Computing Machine . . . 569
Mr. J. B. Gunn. The Theory of Rectification and Injection at a Metal–Semiconductor Contact . . . 575
Research Notes:
Dr. D. B. Hodges. A Comparison of the Rates of Change of Current in the Step and Return Processes of Lightning Flashes . . . 582
Mr. J. E. Gould and Dr. M. McCaig. Anhysteretic Magnetization of Alcomax III . . . 584
Letters to the Editor:
Mr. J. E. Parrott. The Effects of Heat Flow on Thermoelectric Power in Semiconductors . . . 587
Mr. G. G. E. Low. Properties of Point Contacts on Cobaltite . . . 589
Reviews of Books . . . 591
Corrigendum (Goldsmid) . . . 599
Contents of Section A . . . 600

Part 8. *August* 1954.

Prof. R. Whiddington. Physics in the University and the Nation . . . 601
Prof. R. W. Ditchburn and Dr. G. A. J. Orchard. The Polarization of Totally Reflected Light . . . 608
Mr. R. Bullough and Dr. B. A. Bilby. Uniformly Moving Dislocations in Anisotropic Media . . . 615
Mr. R. Lawrance, Dr. A. F. Gibson and Dr. J. W. Granville. On the Current Gain of Germanium Filamentary Transistors . . . 625
Dr. C. A. Hogarth. Current Multiplication Processes in n-Type Germanium Point-Contact Transistors . . . 636
Research Notes:
Dr. D. H. Parkinson and Mr. J. E. Quarrington. The Resistance–Temperature Characteristics of Leaded Brass Wires at Helium Temperatures 644
Mr. P. Ransom and Dr. F. W. G. Rose. On the Relation between the Sum of Donor and Acceptor Concentration and Lifetime in Single Crystal Germanium . . . 646
Letters to the Editor:
Dr. H. K. Henisch and Mr. P. M. Tipple. A Note on the Effect of Temperature Gradients at Point Contacts on Germanium . . . 651
Reviews of Books . . . 653
Contents of Section A . . . 656

Part 9. *September* 1954.

Prof. J. B. Birks and Dr. G. T. Wright. Fluorescence Spectra of Organic Crystals . . . 657
Mr. A. E. Carte. Heat Flow in the Transvaal and Orange Free State . . . 664
Mr. G. S. Brindley. The Order of Coincidence Required for Visual Threshold . 673
Miss J. P. A. Tillett. A Study of the Impact of Spheres on Plates . . . 677
Mr. R. Cade. Contributions to the Theory of Electrostatic Forces on Immersed Bodies . . . 689
Mr. G. Saxon. A Theory of Electron Beam Loading in Linear Accelerators . 705
Prof. Sydney Chapman. A Monochromatically Ionized Layer in a Non-Uniformly Recombinant Atmosphere; with Applications to the D and E Ionospheric Regions . . . 717

PAGE

Research Notes :
Dr. F. E. Hoare, Dr. J. S. Kouvelites, Dr. J. C. Matthews and Mr. J. Preston. The Temperature Variation of Susceptibility of Tantalum . 728
Letters to the Editor :
Mr. D. R. Scott. Transient Heat Flow in Anisotropic Strata . . . 731
Reviews of Books 732
Contents of Section A 736

Part 10. *October* 1954.

Dr. J. A. Lee and Dr. G. V. Raynor. The Lattice Spacings of Binary Tin-Rich Alloys 737
Dr. R. L. Ingraham. Taylor Instability of the Interface between Superposed Fluids—Solution by Successive Approximations 748
Dr. P. T. Nettley. The Approach to the Steady State in Gaseous Thermal Diffusion and its Application to Determining the Dependence of Gas Diffusivity on the Concentration Ratio 753
Dr. D. G. Avery, Dr. D. W. Goodwin, Mr. W. D. Lawson and Dr. T. S. Moss. Optical and Photo-Electrical Properties of Indium Antimonide 761
Dr. J. E. Allen and Dr. P. C. Thonemann. Current Limitation in the Low-Pressure Mercury Arc 768
Dr. T. S. Moss. The Interpretation of the Properties of Indium Antimonide . 775
Mr. P. E. Douglas. The Vapour Pressure of Calcium : I 783
Dr. D. H. Tomlin. The Vapour Pressure of Calcium : II 787
Corrigendum (Tillett) 794
Reviews of Books 795
Contents of Section A 800

Part 11. *November* 1954.

Mr. W. S. S. Blaschke. Field Aberrations in Wide Aperture Optical Systems . 801
Dr. B. D. Saksena and Mr. L. M. Pant. Cathodo-Luminescence of MgO . 811
Mr. J. R. Cook and Mr. K. A. Mahmoud. Luminescence Characteristics of Some Scintillating Crystals 817
Dr. R. O. Gandy. Out-of-Focus Diffraction Patterns for Microscope Objectives 825
Dr. G. C. E. Olds. Mechanisms of Creep in a Precipitation Hardened Alloy . 832
Research Notes :
Dr. J. Woods. The Secondary Electron Emission of Sodium and Zinc . 843
Mr. T. H. Schofield. An Apparatus for Heat-Treatment and Quenching Small Specimens in a Vacuum from High Temperatures 845
Letters to the Editor :
Dr. F. A. Cunnell, Mr. J. T. Edmond and Dr. J. L. Richards. Measurements on some Semiconducting Compounds with the Zinc-Blende Structure 848
Reviews of Books 850
Contents of Section A 856

Part 12. *December* 1954.

Sir Geoffrey Taylor. Diffusion and Mass Transport in Tubes 857
Mr. A. N. Ince. The Effect of Intense Magnetic Fields on Electroluminescent Powder Phosphors 870
Mr. W. P. Osmond. The Effect of Particle Shape Variations on the Coercivity of Iron Oxide Powders 875
Dr. A. Schallamach. On the Abrasion of Rubber 883

PAGE

Research Notes:
Mr. D. C. Northrop and Dr. O. Simpson. Electrical Conductivity of Some Condensed Aromatic Hydrocarbons 892
Dr. Mary D. Waller. Symmetry of Vibrating Square Membrane . . . 895
Dr. Mary D. Waller. Note on Surface Vibrations of a Circumscribed Liquid 899
Reviews of Books 900
Obituary Notices:
Herbert Stanley Allen 905
Alfred Blackie 906
Albert Campbell 907
Francis Cecil Chalklin 910
Reginald Stanley Clay 912
Frank Kenneth Goward 914
Frank Lloyd Hopwood 915
John Edward Lennard-Jones 916
Robert Stewart Whipple 917
Maurice Edmond Joseph Gheury de Bray 919
Fred Harrison 919
Contents of Section A 920
Subject Index, Section B, Vol. 67 921
Index of Authors (with Titles), Section B, Vol. 67 927
Index to Reviews of Books, Section B, Vol. 67 933

PROCEEDINGS AT THE MEETINGS OF THE PHYSICAL SOCIETY

SESSION 1953–54

16*th September* 1953

The seventy-fourth meeting of THE COLOUR GROUP, in the Physics Department, Imperial College, Imperial Institute Road, London S.W.7. Dr. L. C. Thomson was in the Chair.

The following paper was read : Some aspects of white, grey and black, by Mr. Ralph M. Evans.

1*st October* 1953

The sixty-first meeting of THE OPTICAL GROUP, in the Physics Department, Imperial College, Imperial Institute Road, London S.W.7. Mr. J. Guild was in the Chair.

The following papers, the second with a demonstration, were read : Aberration balancing in anastigmats, by Dr. E. H. Linfoot, and Scatter fringes of equal thickness, by Dr. J. M. Burch.

8*th October* 1953

The forty-fifth meeting of THE LOW TEMPERATURE GROUP, in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. Professor D. M. Newitt was in the Chair.

The meeting took the form of a symposium on superconductivity and the following papers were read : The experimental study of superconductivity at Cambridge, by Dr. A. B. Pippard; Hard superconductors—tantalum, niobium, vanadium, by Mr. H. Teague; The heat conductivity of superconductors, by Mr. C. A. Renton; Superconductivity at high pressures, by Professor G. O. Jones.

16*th October* 1953

The fifty-third meeting of THE ACOUSTICS GROUP, in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. Mr. L. C. Pocock was in the Chair.

The following lecture was given and discussed : Stress waves in solids, by Dr. H. Kolsky.

23*rd October* 1953

Science Meeting, in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. Professor L. F. Bates was in the Chair.

The seventh (1953) Charles Chree Medal and Prize was presented to Professor J. Bartels (Göttingen University) who afterwards delivered his address entitled : Chree's influence on present-day geophysics.

4*th November* 1953

The seventy-fifth meeting of THE COLOUR GROUP, in the Lecture Theatre of the Institute of Ophthalmology, Judd Street, London W.C.1. Dr. L. C. Thomson was in the Chair.

The following papers were read and discussed : Chemical and nervous factors in scotopic dark adaptation, by Dr. W. A. H. Rushton; Some properties of the cat's eye, by Dr. R. A. Weale.

12*th November* 1953

The sixty-second meeting of THE OPTICAL GROUP, in the Lecture Room of the Institute of Ophthalmology, Judd Street, London W.C.1. Dr. H. H. Hopkins was in the Chair.

The following paper was read and discussed: The latent period of vision and the Pulfrich effect, by Dr. G. B. Arden and Dr. R. A. Weale.

A discussion on Binocular Vision was opened by Professor W. D. Wright, and followed by Mr. R. J. Spottiswoode and Dr. D. Gabor.

12*th November* 1953

The fifty-fourth meeting of THE ACOUSTICS GROUP, in the Small Lecture Theatre of Imperial College, Imperial Institute Road, London S.W.7. Mr. L. C. Pocock was in the Chair.

The following lecture was given and discussed: Recent work on cavitation, by Dr. B. Noltingk.

17*th November* 1953

The forty-sixth meeting of THE LOW TEMPERATURE GROUP, in conjunction with the Institute of Physics, in the small Lecture Theatre of the Institution of Mechanical Engineers, Storey's Gate, London S.W.1. Mr. A. G. Clausen was in the Chair.

The following papers were read and discussed: Some considerations relating to the design of freeze-drying plant, by Dr. R. A. Kekwick; A study of the factors governing the rate of freeze drying of blood plasma, by Dr. R. F. Strickland-Constable.

A demonstration of some freeze drying equipment was arranged by Messrs. W. Edwards & Co. in the vestibule after the meeting.

20*th November* 1953

Science Meeting, in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. The President, Professor R. Whiddington, was in the Chair.

It was announced that Council had elected the following to Student Membership: Percival Davis McCormack, John Michael Radcliffe, Michael Arthur Short.

The following were elected to Fellowship: Julian Eisenstein, Walter Lawrence, Patrick Herbert Lee, Hideo Takaki, John Michael Ziman.

The thirtieth (1953) Duddell Medal was presented to Professor W. Sucksmith (Sheffield University), who afterwards gave an account of his work entitled: Some magnetic measurements techniques and applications.

The ninth (1953) Charles Vernon Boys Prize was presented to Professor F. C. Williams (Manchester University), who afterwards gave an account of his work entitled: Cathode-ray tube storage for digital computers.

8*th December* 1953

The fifty-fifth meeting of THE ACOUSTICS GROUP, in the Lecture Theatre of the Science Museum, London S.W.7. Mr. L. C. Pocock was in the Chair.

The following lecture was given: The theory of hearing, by Professor R. J. Pumphrey. This was followed by a discussion which was opened by Mr. I. A. Tumarkin.

9*th December* 1953

The seventy-sixth meeting of THE COLOUR GROUP, in the Tea Room of the Institution of Electrical Engineers, Savoy Place, London W.C.2. Mr. J. G. Holmes was in the Chair.

The meeting took the form of a symposium on: The colour rendering properties of fluorescent lamps, and the following papers were read and discussed: Binocular viewing investigations, by Miss B. M. Young and Mr. G. T. Winch; A critical review of colour-rendering problems, by Dr. S. T. Henderson and Mr. D. T. Waigh; A logical method of investigating colour rendering, by Dr. B. H. Crawford.

10*th December* 1953

The eighth Annual General Meeting of THE LOW TEMPERATURE GROUP, in the Lecture Theatre of the Science Museum, London S.W.7. Mr. C. M. Brain was in the Chair.

Minutes of the seventh Annual General Meeting were read and confirmed.

The Report of the Committee for 1952–1953 was presented.

The Officers and Committee for 1953–54 were elected.

A vote of thanks was accorded to retiring Committee Members.

10*th December* 1953

The forty-seventh meeting of THE LOW TEMPERATURE GROUP, in the Lecture Theatre of the Science Museum, London S.W.7. Mr. C. M. Brain was in the Chair.

The following paper was read: The performance and operation of low temperature rectifying columns, by Mr. A. G. Mackie.

10*th December* 1953

The sixty-third meeting of THE OPTICAL GROUP, in the Physics Department, Imperial College, Imperial Institute Road, London S.W.7. Mr. J. Guild was in the Chair.

The following papers were read: Some problems in making mirrors for large astronomical telescopes, by Mr. G. E. Manville; The working of small, hyperhemispherical lenses, by Mr. M. G. L. Curties; Making optical components of crystalline quartz and synthetic crystalline materials, by Mr. H. W. Yates.

The following film was shown: Grinding a 98-inch telescope mirror.

5*th January* 1954

The fifty-sixth meeting of THE ACOUSTICS GROUP, at the Trinity College of Music, 11 Mandeville Place, London W.1. Mr. L. C. Pocock was in the Chair.

The following paper was read and discussed: Cathedral acoustics, by Mr. Hope Bagenal.

6*th January* 1954

The seventy-seventh meeting of THE COLOUR GROUP, at the Royal Photographic Society, 16 Princes Gate, London S.W.7. Dr. L. C. Thomson was in the Chair.

The following papers were read and discussed: Modern theories of the colour of organic molecules, by Dr. W. C. Price; The use of coloured couplers to overcome unwanted absorptions in colour photography, by Dr. R. W. G. Hunt.

26th January 1954

The forty-eighth meeting of THE LOW TEMPERATURE GROUP, in the Lecture Room of the Institute of Physics, 47 Belgrave Square, London S.W.1. Professor D. M. Newitt was in the Chair.

The following lecture was given: A new method of determining P–V–T relation down to temperatures of −180°C, by Professor A. Michels.

28th January 1954

The sixty-fourth meeting of THE OPTICAL GROUP, in the Physics Department, Imperial College, Imperial Institute Road, London S.W.7. Mr. J. Guild was in the Chair.

The following papers were read: The precision measurement of solar wavelengths, by Dr. M. G. Adam; Physical photometry, by Mr. J. S. Preston.

12th February 1954

The fifty-seventh meeting of THE ACOUSTICS GROUP, in the Lecture Theatre of the Science Museum, London S.W.7. Mr. L. C. Pocock was in the Chair.

The following lecture was given: A technique of sound recording on glass discs, by Mr. A. J. Forty.

17th February 1954

The seventy-eighth meeting of THE COLOUR GROUP, in the Physics Department, Imperial College, Imperial Institute Road, London S.W.7. The Chair was taken by Dr. L. C. Thomson, and later in the meeting by Dr. W. S. Stiles.

The following papers were read and discussed: A study of the appearance of spectral colours and their relationship to Müller's theory of vision, by Dr. L. C. Thomson; Some conservative thoughts on the trichromatic theory, by Professor W. D. Wright.

18th February 1954

The fifty-eighth meeting of THE ACOUSTICS GROUP, in cooperation with the Institute of Metals, in the Lecture Hall of the Institute of Metals, 4 Grosvenor Gardens, London S.W.1. Mr. L. C. Pocock was in the Chair.

The following lectures were given and discussed: The temperature anomalies in the elasticity, electrical and thermal conductivities and thermal expansion of dilute chromium alloys, by Mr. H. Pursey and Dr. R. W. Powell; The ductile–brittle transformation of chromium, by Mr. A. Sulley; The preparation of dilute chromium alloy specimens for elasticity investigation, by Mr. J. H. Randall.

18th February 1954

The forty-ninth meeting of THE LOW TEMPERATURE GROUP, in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. Dr. F. Din was in the Chair.

A report of the Congress of the International Union of Physics at Houstoun, U.S.A. was given by the following principal speakers: Recent work on superconductivity, by Dr. R. E. Faber; Nuclear magnetism and adiabatic demagnetization, by Dr. N. Kurti; Liquid helium, by Dr. Wilks.

4*th March* 1954

The fifty-ninth meeting of THE ACOUSTICS GROUP, at the Playhouse Theatre, Northumberland Avenue, London W.C.2. Mr. A. T. Pickles was in the Chair.

A lecture entitled "The acoustic technique in broadcasting", was given by Dr. Alexander and Mr. T. Somerville.

17*th March* 1954

The fiftieth meeting of THE LOW TEMPERATURE GROUP, in the Science Museum, Exhibition Road, London S.W.7. Professor D. W. Newitt was in the Chair.

The following paper was read: Hydrogen liquefaction, by Dr. A. J. Croft.

18*th March* 1954

The thirteenth Annual General Meeting of THE OPTICAL GROUP, in the Physics Department, Imperial College, Imperial Institute Road, London S.W.7. Mr. J. Guild was in the Chair.

The Minutes of the twelfth Annual General Meeting were read and confirmed.

The Report of the Committee for 1953–54 was approved.

The Officers and Committee for 1954–55 were elected.

A vote of thanks was accorded to retiring Committee Members.

18*th March* 1954

The sixty-fifth meeting of THE OPTICAL GROUP, in the Physics Department, Imperial College, Imperial Institute Road, London S.W.7. Mr. J. Guild was in the Chair.

The following papers were read, the second with a demonstration: A new photoelectric optical test bench, by Mr. W. N. Sproson; Recent developments in colour television, by Mr. L. C. Jesty.

24*th March* 1954

The fourteenth Annual General Meeting of THE COLOUR GROUP, at the Institute of Ophthalmology, Judd Street, London W.C.1. Dr. L. C. Thomson was in the Chair.

The Minutes of the thirteenth Annual General Meeting were read and confirmed.

The Report of the Committee for 1953–54 was approved.

The Officers and Committee for 1954–55 were elected.

A vote of thanks was accorded to retiring Committee Members.

24*th March* 1954

The seventy-ninth meeting of THE COLOUR GROUP, at the Institute of Ophthalmology, Judd Street, London W.C.1. Dr. L. C. Thomson was in the Chair.

The following papers were presented: Additivity of colour equations, by Miss P. W. Trezona; The number of kinds of human retinal receptors and the spatial and temporal summation and resolution allowed by their pathways, by Dr. G. S. Brindley.

26*th March* 1954

Science Meeting, in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. The President, Professor R. Whiddington, was in the Chair.

It was announced that Council had elected the following to Student Membership: Michael John Bailey, Robert K. Bell, Dennis Herbert Bowen, Cyril Carter, Roy Victor Coates, David Dickinson, David Norman Edwards, Hanna Sidonie Therese Gottfried,

Donald Gugan, Brian Roy Harris, Robert Hall Haynes, Stanley Hinds, Ronald Kitching, Michael Leon Levin, Elliott Hershel Lieb, Roger Geoffrey Loasby, Walter Charles Marshall, Michael John Millican, Wilson Menzies Nicol, Ian Stuart Norris, John Willingdon Reader, Donald Martin Roycroft, Gilbert Neil Spokes, Michael Richard Wall, Hang Yee.

The following were elected to Fellowship, the first five being transferred from Student Membership :—Adrian Victor Cohen, John Robert Gabriel, Arthur Godfrey Hunt, Geoffrey Wilfred Wilson, Murray M. Winn; Mathur Mohan Das, Joan Margaret Drewitt, Charles Edward Dworjack-Graham, Henry Edward Gunn, Nicolai Herlofson, Sidney Philip Holloway, Ragnar Holm, Erik Vilhelm Hulthén, Victor A. Kuznetsov, Egon E. Loebner, Frank Reginald Nunes Nabarro, Brian Wynne Oakley, Alfred Lauck Parson, Kaza Sreeramamurty, B. N. Srivastava, Kenneth William Harry Stevens, Arthur Francis Turner, June Dorothy Whitcher, Lancelot Law Whyte, Cecil Stanley Yeates.

The Guthrie Lecturer, Sir Geoffrey Taylor, was unable to attend owing to illness ; a substitute programme was therefore arranged, and Dr. H. H. Hopkins delivered a lecture entitled : Recent applications of Fourier transforms to optical problems.

29*th March* 1954

The seventh Annual General Meeting of THE ACOUSTICS GROUP, at the Royal Society of Arts, 6 John Adam Street, London W.C.2. Mr. W. West was in the Chair.

The Minutes of the sixth Annual General Meeting were read and confirmed.

The Report of the Committee for 1953–54 was approved.

The Officers and Committee for 1954–55 were elected.

A vote of thanks was accorded to the retiring Committee Members.

29*th March* 1954

The sixtieth Science Meeting of THE ACOUSTICS GROUP, at the Royal Society of Arts, 6 John Adam Street, London W.C.2. Mr. A. T. Pickles was in the Chair.

The following paper was read : Double reeds : a note on their design and methods of making them, by Mr. W. H. Tait.

30*th and* 31*st March and* 1*st April* 1954

Spring Provincial Meeting, in the Physics Department, University College, Dublin. The President, Professor R. Whiddington, was in the Chair. The subject of the meeting was : High energy accelerators and cosmic rays.

The following papers were read and discussed : Accelerators for very high energies—an introductory survey, by T. G. Pickavance; The magnetic field of the Birmingham proton synchrotron, by J. L. Symonds; The injection system of the Birmingham synchrotron, a trajectory plotter for use with magnets of circular symmetry, by C. A. Ramm; Recent experiments with the Brookhaven cosmotron, by J. L. Hughes; Recent experiments on the Harwell cyclotron, by T. C. Randle; High energy accelerators at the Radiation Laboratory, Berkeley, by J. Reginald Richardson; Recent work on heavy mesons, by J. V. Major; Methods of mass estimation in photographic emulsions, by C. O'Ceallaigh; Experiments on the Cerenkov radiation from high energy air showers, by J. V. Jelley and W. Galbraith; The scattering of μ-mesons in lead, by J. McDiarmid; Recent work on heavy mesons and hyperons, by Bristol University; Extensive air showers, by T. E. Cranshaw and W. Galbraith; Local penetrating showers, by J. G. Dardis, P. D. McCormick, C. B. A. McCusker and B. G. Wilson; The Manchester spectrograph and its application to measurements on μ-mesons, by B. G. Owen; Investigation of nuclear energy levels by high resolution neutron spectroscopy, by D. J. Hughes; The negative proton in cosmic radiation, by J. McConnell; Relativistic theory of collisions of particles with angular momentum, by J. L. Synge; Autoionization, by A. Dalgarno; Excitation of the rotational and vibrational levels of molecular hydrogen by electron impact, by T. R. Carson; Collisions

between doubly charged positive ions and neutral atoms, by D. R. Bates and B. L. Moiseiwitsch; Electron collisions in nitrogen, by D. T. Stewart; The spectra of the manganese halides, by W. Hayes and T. E. Nevin; Collisions between positive and negative ions of atomic hydrogen, by D. R. Bates and J. T. Lewis; The Layzer approximation for treating collisions between electrons and atoms, by U. Öpik; Nitrogen atoms and active nitrogen, by D. T. Stewart and K. G. Emeléus; The Liverpool cyclotron, by J. R. Holt.

8th April 1954

A Fellows' Luncheon took place in the Upper Dining Hall, Imperial College Union, Prince Consort Road, London S.W.7. The President, Professor R. Whiddington, was in the Chair.

8th–13th April 1954

The following discourses were delivered during the 38th Physical Society Exhibition of Scientific Instruments and Apparatus at Imperial College, London S.W.7: Electrical contacts, by Professor F. Llewellyn Jones (*8th April*); An artificial talking device, by Mr. W. Lawrence (*9th April*); The study of surface micro-topography by optical methods, by Professor S. Tolansky (*12th April*).

The Prizes and Certificates awarded in the Craftsmanship and Draughtsmanship Competition were presented on the 8th April by Professor R. Whiddington (President and Chairman of the Exhibition Committee).

12th April 1954

The sixty-first meeting of The Acoustics Group, at the City & Guilds College, Exhibition Road, South Kensington, London S.W.7. Dr. E. C. Cherry was in the Chair.

The meeting took the form of a symposium on analysis, synthesis and recognition of speech, and the following papers were read and discussed: The parameters of speech, by Dr. E. W. Ayers; Measurement of the intelligibility of speech links, by Mr. D. L. Richards and Mr. A. R. Bones; The experimental synthesis of speech from parameters, by Mr. W. Lawrence; The recognition of synthetized speech sounds, by Dr. D. B. Fry; Attention and memory in listening to speech, by Dr. D. E. Broadbent; The classification and coding of signals in the nervous system, by Dr. A. M. Uttley.

15th April 1954

The fifty-first meeting of The Low Temperature Group, in the Lecture Theatre of the Science Museum, Exhibition Road, London S.W.7. Professor D. W. Newitt was in the Chair. The subject of the meeting was: Low temperature calorimetry.

The following papers were given: A general survey, by Dr. D. H. Parkinson; Some recent investigations, by Dr. R. W. Hill.

28th April 1954

The sixty-second meeting of The Acoustics Group, in the Physics Department, Imperial College, Imperial Institute Road, London S.W.7. Mr. A. T. Pickles was in the Chair.

The following lecture was given and discussed: Absorption of sound in gases, by Professor H. O. Kneser.

6th May 1954

The sixty-sixth meeting of THE OPTICAL GROUP, in the Physics Department, Imperial College, Imperial Institute Road, London S.W.7. Dr. L. C. Martin was in the Chair.

The following papers were given: A spectrophotometer for estimating ozone in the atmosphere, by Dr. R. H. Kay; Optics at the National Bureau Standards, by Mr. D. P. Feber.

6th–10th May 1954

THE LOW TEMPERATURE GROUP visited Western Germany. The party arrived at Hagen on the 6th May and Oxygen Plants of the Messer Co. were inspected on 7th May. A joint scientific meeting with members of the German Physical Society was held at Göttingen on the 8th and 9th May.

13th May 1954

Science Meeting, in the Lecture Theatre of the Royal Astronomical Society, Burlington House, London W.1. The President, Professor R. Whiddington, was in the Chair.

The 9th (1954) Holweck Medal and Prize was presented to Professor A. Kastler (University of Paris), who afterwards delivered a lecture entitled: Les méthodes optiques d'orientation atomique et leurs applications.

19th May 1954

PHYSICAL SOCIETY and the INSTITUTE OF PHYSICS, Joint Colloquia on Electron Physics, in the Physics Lecture Theatre, University College, Gower Street, London W.C.1. Professor H. S. W. Massey was in the Chair.

The subject of the meeting was Scattering of electrons, and the following papers were given: Electron scattering, by Professor H. S. W. Massey; The refractive index of metals in electron diffraction experiments, by Dr. M. Blackman; Elastic scattering and the resolution limit of the electron microscope, by Mr. M. E. Haine.

25th May 1954

Annual General Meeting, in the Lecture Theatre of the Royal Institution, Albemarle Street, London W.1. The President, Professor R. Whiddington, was in the Chair.

Minutes of the previous Annual General Meeting and Extraordinary General Meeting held on 15th May 1953 were read and confirmed.

The Reports of Council and the Honorary Treasurer and the Accounts and Balance Sheet for 1953 were adopted.

As there were no nominations in excess of the number required under the Articles of Association, no ballot was necessary, and the Officers and Council for 1954–55 were elected.

The auditors, Messrs. Knox, Cropper & Co. were re-elected.

Votes of thanks were accorded to retiring officers and members of Council, to the officers and members of the committees of the Society, and of the Society's specialist groups; to the Rector and governing body of Imperial College, and to the Heads of the various departments who have given hospitality to the Society at the Annual Exhibition; to the Managers of the Royal Institution, the Directors of the Science Museum and of the various universities at which meetings have been held, and to the Royal Commissioners for the Exhibition of 1851.

25*th May* 1954

Science Meeting, in the Lecture Theatre of the Royal Institution, Albemarle Street, London W.1. The President, Professor H. S. W. Massey, was in the Chair.

It was announced that Council had elected the following to Student Membership :— Franklin Albert Baker, David Ewart Evans, John Francis James, Milton Thomas Lilburne, Alan Phillip Marks, Robert Alan Melter, Hugh Montgomery, Maurice Ronald Price, Charles Anthony Renton, Michael Douglas Scott-Scott, Robert George Summersgill, Robert Thomas Taylor.

The following were elected to Fellowship, the first thirty being transferred from Student Membership :—Sean Alan Ahearn, John Edward Allen, Peter James Becque, Douglas Blackwood, Arnold Rudolph Bodmer, Ivor Brodie, Leonard Kenneth Burton, James Gordon Campbell, Walter Scott Carter, Geoffrey Vivian Chester, Ella Valerie Joyce Domleo, Michael Ellis Fisher, Leslie Freedman, Michael Wolf Friedlander, Paul Gangolf Heyda, Peter Ware Higgs, David Hughes, Stephen Charles Hunter, Renallt Hill Jones, Stephen Kaye, Charles Dennis Mee, Edward Anthony Mussett, Patrick Nevill, Dennis Rosen, Peter Allan Schroeder, Michael Anthony Snelling, Edward B. M. Steers, Jon Pyser Tilt, William Horace Tucker, Peter Albert Walker; Ulrich Wolfgang Arndt, Harold Abraham Bernstein, Basil Brown, Kyle Campbell, Jose S. Dionisio, Helmut Drubba, Cyril Richard Forshaw, John David Gething, Gotthard V. A. Gustafsson, Joseph Hayes Hall, H. Philip Hovnanian, Frederick M. Kelly, J. Wesley Kemp, Norman Robert McCormick, John Richard Millburn, Thomas Edwin Nevin, John Laban Putnam, Eric Walter Ray, Harold Owen Wilson Richardson, Frank Cornelius Roesler, Said Hussein El-Sabeh, John Savage, Beno Schneidmesser, Benjamin E. Sturlesi, Brian Milton Spicer, Eric Dennis Swann, Peter Swinbank, Harry John Teague, Albert George Herbert Troughton, Peter Albert Walker, George Benson Watkins, William Stanley Cossom Williams, Alan Frank Bernard Wood.

The Presidential Address was delivered by Professor R. Whiddington (retiring President). His subject was : Physics in the university and the nation.

26*th May* 1954

The eightieth meeting of The Colour Group, at the Institute of Ophthalmology, Judd Street, London W.C.1. Dr. L. C. Thomson was in the Chair.

The following papers were read : Subjective white in colour television, by Mr. W. N. Sproson; Colour preferences in television pictures, by Dr. M. Gilbert.

7*th*, 9*th and* 12*th July* 1954

Summer Meeting, in connection with the General Assembly of the International Union of Pure and Applied Physics, in the Lecture Theatre of the Royal Institution, 21 Albemarle Street, London W.1. The Chair was taken by : The President, Professor H. S. W. Massey, on 7th July; Professor O. R. Frisch, on 9th July; Professor Sir Lawrence Bragg, on 12th July.

The following lectures were given : 7*th July*, Fields and particles, by Professor J. A. Wheeler (Princeton University), 9*th July*, The European organization for nuclear research, by Professor E. Amaldi (Instituto di Fisica, Rome); 12*th July*, Microwave experiments in the physics of solids, by Professor C. Kittel (California University).

9*th and* 10*th July* 1954

The sixty-seventh meeting of The Optical Group, at Reading University, Berkshire. Mr. J. Guild was in the Chair.

The following papers were given : The function of eye movements in the visual process, by Mr. D. H. Fender; The measurement of the absorption coefficients in the vacuum ultra-violet, by Professor R. W. Ditchburn; Absorption measurements on thin films by Dr. O. S. Heavens; Soft x-ray spectroscopy, by Dr. E. W. J. Mitchell.

Abstracts of Special Lectures

7th (1953) Charles Chree Medal. Professor J. Bartels.

Chree's Influence on Present-Day Geophysics

For the analysis of long series of observations Chree has introduced methods which have proved effective in geomagnetism, meteorology and other fields. They are discussed as parts of the morphology of geophysical time-series, and applications are described in studies of solar and lunar influences on geophysical phenomena.

30th (1953) Duddell Medal. Professor W. Sucksmith.

Some Magnetic Measurements Techniques and Applications

In general, measurements of permeability or susceptibility are in effect measurements of magnetic induction or intensity of magnetization respectively. In the first case ballistic methods are usually employed, whilst in the second traction methods predominate. The lecturer believes that for ferromagnetics, particularly in the high fields produced by electromagnets, the techniques involving the measurement of force are superior in both convenience and accuracy and also avoid troublesome sources of error. The ferromagnetic balance can be used for measurements of all temperatures. Extension to low fields is described in the latest form of the apparatus, which now permits of *in situ* determinations of the complete (I, H) curve up to the highest fields. Typical examples of the various applications will be dealt with.

9th (1953) Charles Vernon Boys Prize. Professor F. C. Williams.

Cathode-Ray Tube Storage for Digital Computers

The requirement for digit storage arises in connection with automatic digital computers of the general type envisaged by Babbage in 1828. The requirement is for the provision of storage space which can hold up to, say, half a million binary digits each of which may be either 0 or 1, and all of which may be subject to ordered change as the problem proceeds.

The present research began in the summer of 1946, with the object of devising a store using a cathode-ray tube. The cathode-ray tube spot was to be scanned in a television-type raster and so mark out a number of lines, each line being broken up into a number of ' storage areas '. Each area had to be able to hold an electric charge indicative of either 0 or 1 in the binary system of notation. In the autumn of that year a workable process of ' regeneration ' was discovered. By this process the charge pattern on the screen is ' read ' continuously, digit by digit, at a rate of 100 000 sec^{-1}. As each digit space is ' read ' its state, 0 or 1, is determined and action is taken to reset the space to the state, 0 or 1, that had been detected. In this way leakage effects were nullified and repeated reading of stored information became possible.

Since then many improvements have been made. It is now commonplace to store over 1000 binary digits on a single cathode-ray tube. The state of any one of these digits is determinable on demand with a delay of a few microseconds only. The store has been incorporated in two or three machines in this country and in many more in the United States.

9th (1954) Holweck Medal and Prize. Professor A. Kastler.

Published in *Proc. Phys. Soc.* A, 1954, **67**, 853.

THE PHYSICAL SOCIETY

REPORT OF COUNCIL FOR THE YEAR ENDED 31ST DECEMBER 1953

The membership of the Society, and the sale of its publications, continue to increase both at home and abroad.

The new Articles of Association for the Society, which were under consideration by the Board of Trade a year ago, were approved by them and adopted at an Extraordinary General Meeting on 15th May, 1953 ; the new procedure for the election of Officers and Council will be effective for the first time for the elections at the Annual General Meeting in May, 1954.

The separation of payment by Fellows for membership of the Society and for publications, which came into effect on 1st January, 1953, has worked smoothly, and appears to be serving better the needs of Fellows. Interest is steadily growing in the Reprint Service which was introduced at the same time : this was a radical departure from established practice and it is too early to assess its ultimate value.

Under the will of the late Mrs. W. Phillips, widow of the late Major C. E. S. Phillips, a very generous bequest is to fall to the Society ; the precise amount by which the Society will benefit is not yet known.

The Council of the Physical Society wishes to record the cordial thanks of the Society to the various bodies who provided hospitality for the Science Meetings of the Society and its four Groups, and to the Rector and Governing Body of Imperial College and the Heads of the Physics and Chemistry Departments for the privilege of holding the Annual Exhibition in these sections of the College.

MEETINGS

The Annual General Meeting was held at the Imperial College on 15th May, 1953. Reports of the Council and of the Honorary Treasurer and the Annual Accounts for 1952 were adopted.

Professor R. Whiddington C.B.E., M.A., D.Sc., F.R.S. was re-elected President and the Officers and Council for 1953–54 were elected.

Meetings out of London were held at the University of Leeds on 31st March and 1st April, and at the University of Durham, King's College, Newcastle-upon-Tyne, on 13th and 14th July. A Conference (sponsored jointly by the Electrical Research Association, the Institute of Physics and the Physical Society) was held at the Clarendon Laboratory, Oxford, from 18th–23rd July. The subject was " Ionization Phenomena in Discharges ".

Five Science Meetings were held in London during the year. The arrangement for publication of the sessional list of meetings of the Society and its Specialist Groups, and the sessional list of meetings of the Institute of Physics was continued.

A Fellows' Luncheon was held in London on 13th April, the Opening Day of the Annual Exhibition of Scientific Instruments and Apparatus. Many Fellows expressed their appreciation of this opportunity to meet, and it is hoped to establish it as an annual function.

MEMORIAL LECTURES AND AWARDS

The 37th Guthrie Lecture was delivered by Professor Max Born on " The Conceptual Situation in Physics and its Prospects of Development " at the Science Museum on 13th March, 1953.

The 8th Holweck Medal of the Société Française de Physique and the Holweck Prize of the Physical Society were presented to Mr. J. A. Ratcliffe in Paris in May, 1953. The Holweck Discourse delivered by Mr. Ratcliffe was entitled " Diffraction of Radio Waves by the Ionosphere ".

The 7th Charles Chree Medal and Prize was presented to Professor J. Bartels at the Science Museum on 23rd October, 1953. The Charles Chree Address delivered by Professor Bartels was entitled " Chree's Influence on Present-Day Geophysics ".

The 30th Duddell Medal was presented to Professor W. Sucksmith, who gave a talk on " Some Magnetic Measurements—Techniques and Applications ", and the 9th Charles Vernon Boys Prize was presented to Professor F. C. Williams, who gave a talk on " Cathode-Ray Tube Storage for Digital Computers ".

The presentations were made at the Science Museum on 20th November, 1953.

EXHIBITION OF SCIENTIFIC INSTRUMENTS AND APPARATUS

The 37th Exhibition was held at Imperial College from 13–17th April, 1953, and was housed in the Physics and Chemistry Departments in the Main Building, and one exhibit in the Mathematics Department in the Huxley Building. The attendance showed an increase over that of the previous year, reaching 20,000 including members and exhibitors. The Society was again greatly indebted to Mr. A. G. Peacock for his invaluable services in his capacity as Honorary Exhibition Secretary.

The Craftsmanship and Draughtsmanship Competition was held in March, and 113 entries were displayed at the Exhibition. By courtesy of the Director of the Science Museum prize-winning entries were displayed for a further period in the Science Museum. The Council records its appreciation of a further donation of £50 by the Scientific Instrument Manufacturers' Association from the Bowen Trust Fund. This was applied to the first prizes in four of the classes in the Competition as in 1952, these prizes being designated 'Bowen Prizes'. A Prize to commemorate the work of the late Professor Silvanus P. Thompson at the City and Guilds of London Institute Technical College was again awarded.

PUBLICATIONS

Proceedings

Once again it is a pleasure to record the indebtedness of the Society to those who have acted as referees for papers submitted for publication in the *Proceedings of the Physical Society*. With their help it has been possible to maintain a high standard of subject matter and presentation. The necessity for their work is seen from the following figures: Of 415 manuscripts (282 Papers, 55 Research Notes, 78 Letters to the Editor) received during the year, 258 were accepted in their original form, 89 were accepted after amendment and 68 were rejected. It is hoped that authors also will continue to help the Society and its referees by giving manuscripts a careful checking before they submit them for publication.

Reports on Progress in Physics

Volume 16 of this series was published in April, 1953. It contained 9 articles in various branches of physics. The *Reports* have been criticized for being sometimes not sufficiently readable by the physicist not a specialist in the particular fields. In an endeavour to correct this, authors are being asked to ensure that the introductory section of any *Report* is fairly broad and elementary in scope.

A comprehensive cumulative subject index for Volumes 1–10 prepared by Mr. M. E. J. Gheury de Bray, and referred to in the 1952 Report of Council, was published during the summer of 1953.

MEMBERSHIP

Roll of Membership		Hon. Fellows	*Ex-officio* Fellows	Fellows		Student Members		Total
Totals, 31st Dec. 1952		9	4	1704		384		2101
Changed during 1953	Newly elected			75		58		
	Re-elected			2	128		58	
	Transferred			51		51		
	Deceased			9				
	Resigned			78	87	19	70	
	Lapsed							
	Net increase				41		−12	29
Totals, 31st Dec. 1953		9	4	1745		372		2130

The following is a summary of the membership during the past eight years :

Year	1946	1947	1948	1949	1950	1951	1952	1953
Newly elected Student Members	53	102	126	77	103	117	83	58
Transfers from Student Membership	46	33	39	50	52	69	46	51
Newly elected Fellows	139	126	87	71	65	98	76	77
Net increase in Fellowship	165	137	60	48	21	83	57	41
Net increase in total Membership	160	179	120	39	40	89	76	29
Total Membership at 31st December	1617	1796	1985	2044	1936	2025	2101	2130

GROUPS

Colour Group

The thirteenth Annual General Meeting of the Colour Group was held on Wednesday, 25th March, 1953, in the Physics Department of Imperial College. Dr. L. C. Thomson was elected Chairman, and Mr. R. W. G. Hunt was re-elected Honorary Secretary. A Resolution recommending an increase in the subscription rates was approved, except in the case of overseas members who it was agreed should pay a special reduced subscription.

Seven Science Meetings were held in London during the year. The summer meeting was held on Thursday, 25th June 1953, at the Dyehouse Laboratories of Imperial Chemical Industries Limited, Blackley, Manchester. It is expected that the report of the Sub-Committee on Colour Systems will be completed before the summer of 1954.

Optical Group

The twelfth Annual General Meeting of the Optical Group was held on Thursday, 19th March 1953, in the Physics Department of Imperial College. Mr. J. Guild was elected Chairman, Professor L. C. Martin was re-elected Vice-Chairman, and Mr. K. J. Habell was re-elected Honorary Secretary.

Five Science Meetings were held in London during the year. The summer meeting was held on Friday and Saturday, 26th and 27th June 1953, at St. John's College, Cambridge.

Low Temperature Group

The eighth Annual General Meeting of the Low Temperature Group was held on Thursday, 10th December 1953, at the Science Museum. Professor D. M. Newitt was re-elected Chairman, Mr. C. M. Brain Vice-Chairman, and Dr. F. Din Honorary Secretary.

Five Science Meetings were held in London during the year. The summer meeting was held on Friday, 29th May 1953, at the H. H. Wills Physical Laboratory of the University of Bristol.

ACOUSTICS GROUP

The sixth Annual General Meeting of the Acoustics Group was held on Thursday, 26th March 1953, at the City and Guilds College. Mr. W. West was re-elected Chairman, and Mr. L. C. Pocock was re-elected Vice-Chairman, and Mr. W. A. Allen and Dr. R. W. B. Stephens were re-elected Joint Honorary Secretaries.

Various amendments to the regulations governing the Group were approved.

Nine Science Meetings were held in London during the year.

MEMBERSHIP

The membership of the four Groups on 31st December 1953 was as follows :

	Colour	Optical	Low Temperature	Acoustics
Members of the Physical Society	118	197	75	104
Members of participating bodies	78	41	48	137
Members of firms subscribing for sustaining membership . .	22	75	—	—
Ex-officio members	—	—	—	2
Other members	26	22	24	41
	244	335	147	284

The following is a summary of the membership of the four Groups during the past eight years :

	1946	1947	1948	1949	1950	1951	1952	1953
Colour Group	208	210	223	232	216	219	239	244
Optical Group	381	286	363	356	326	315	336	335
Low Temperature Group .	85	88	90	94	118	124	130	147
Acoustics Group . . .	—	205	265	277	291	260	286	284

OBITUARY

The Council has learned with great regret of the deaths of the following Fellows : Mr. J. J. V. Armstrong, Mr. R. Donaldson, Mr. Theodore Drescher, Sir James Weir French, Dr. S. Gawronski, Dr. W. Hall, Mr. H. F. V. Little (Life Fellow), Mr. W. T. Otway, Dr. L. F. Richardson, Mr. W. H. Towns, Mr. R. S. Whipple (elected 1899, Member of Council 1909/14, Vice-President 1914/16 and 1936/39, Hon. Treasurer 1925/35, President Optical Society 1920/22).

REPRESENTATION ON OTHER BODIES

The Society was represented on various committees as follows :

British Committee for Radiological Units : Sir John Cockcroft, Professor H. T. Flint, Mr. D. W. Fry, Mr. W. G. Marley, Professor E. A. Owen.

British Standards Institution—Acoustics Standards Committee : Mr. A. T. Pickles.

British Standards Institution—Colour Terminology Committee : Mr. J. G. Holmes, Professor W. D. Wright.

British Standards Institution—Committee on Electrical Nomenclature and Symbols : Dr. L. Hartshorn.

British Standards Institution—Committee on Units and Technical Data : Professor H. T. Flint.

British Standards Institution—Sub-Committee on Temperature Measurement : Dr. E. Griffiths.

British Standards Institution—Technical Committee on Optical Instruments : Dr. C. G. Wynne.

British Standards Institution—Technical Committee LGE/2—Nomenclature for Illumination : Mr. J. S. Preston.

British Standards Institution—Technical Committee CHE/50—Test Methods for Powder Properties : Mr. E. J. Pryor.

British Standards Institution—Units and Symbols Standards Committee: Mr. J. H. Awbery.

British Standards Institution—Technical Committee USM/2 Units, Symbols and Abbreviations: Dr. A. C. Stickland.

Chemical Society—Infra-Red Committee: Dr. A. C. Menzies.

Faraday Society—Colloid and Biophysics Committee: Professor J. T. Randall.

Institute of Physics Board: Dr. A. B. Wood, Dr. C. G. Wynne.

Institute of Physics—British Journal of Applied Physics Advisory Committee: Dr. A. G. Gaydon, Dr. H. Kolsky.

Institute of Physics—Journal of Scientific Instruments Advisory Committee: Mr. T. C. Keeley, Dr. C. G. Wynne.

Institution of Electrical Engineers—Joint B.S.I. Committee on Electron Medical and Radio Frequency Industrial Equipment: Dr. R. L. Smith-Rose.

Joint International Committee on Psychrometric Data: Professor P. A. Sheppard.

London Regional Advisory Committee—Applied Physics: Dr. R. W. B. Stephens.

Ministry of Health—Radioactive Substances Advisory Committee: Sir George Thomson.

Ministry of Labour and National Service Committee: The President of the Physical Society.

Royal Astronomical Society—Geophysical Committee: Dr. J. McG. Bruckshaw.

Royal Society British National Committee for Theoretical and Applied Mechanics: Professor O. A. Saunders.

Royal Society Committee on Symbols: Mr. J. H. Awbery, Professor H. T. Flint.

Royal Society National Committee for Crystallography: Dr. H. Wilman.

Royal Society National Committee for Physics: Professor L. F. Bates, Dr. A. C. G. Menzies, Dr. D. Roaf.

Royal Society National Committee for Scientific Radio: Dr. W. J. G. Beynon, Dr. A. C. B. Lovell.

Royal Society Paul Instrument Fund: Professor R. V. Jones.

Royal Society Scientific Accommodation Committee: The President of the Physical Society.

Science Abstracts Committee of Management: Mr. J. H. Awbery, Dr. A. G. Gaydon, Dr. D. Roaf, Dr. A. C. Stickland.

The Council appreciates the valuable work done by these representatives.

TREASURER'S REPORT ON THE ACCOUNTS OF THE PHYSICAL SOCIETY FOR THE YEAR ENDING 31ST DECEMBER 1953

Income and Expenditure Account

The Income and Expenditure account has a special significance on this occasion since it reflects a year's working of the new system of the finances of the Society which, as was pointed out in last year's report on the accounts, was adopted with some measure of faith. The two main features of the new system are the lowering of the subscription from 3 guineas to 2 guineas, and the obtaining of at least a partial payment for all publications supplied to the Fellowship. Obviously, the first represents an expense to the Society and the second a saving, and it will be seen from the accounts now presented that any loss of income resulting from the lowering of subscriptions has been more than compensated for by the increased income from the sale of the publications of the Society.

Membership Expenditure

The lowering of the basis of subscriptions paid by Fellows has inevitably reduced the subscription income by one-third, but the total of the various items of expenditure relating to membership has risen somewhat markedly during the year. The changes in the methods of keeping records, which have followed the change in the subscription system, have upset considerably the normal office arrangements which previously had run very smoothly. In consequence, during the year considerable extra effort has had to be given to this aspect of the Society's activities and the result of this is reflected in the expenditure on matters relating to membership. Whilst the experience of the last year may mean that some permanent re-organisation will be necessary, there is no reason to suppose that the level of expenditure will remain as high as it has been this year. In spite of this additional office expense, the removal of the Science Abstracts expenditure from this section has made the overall picture more favourable than last year.

Groups Expenditure

The Groups expenditure has fallen markedly during the year as compared with last year and, in consequence, the expense of the Groups to the Society has become smaller. However, as was pointed out last year, the Group's activities are very vital to the welfare of the Society and any financial commitment entailed in their activities is more than offset by the contribution made by the Groups to the well-being of the Society.

Publications

For some years now it has been the practice to estimate the value of the stock of publications held by the Society at the end of any year. Since a proportion of this stock relates to publications of some years ago, any estimate of the value of the stock can only be approximate. It has been agreed with the Accountant that in future the value of the stock shall be taken as the cost-price of the stock relating to the year under review and the previous year, and that no allowance shall be made for the value of stock of greater age. The adoption of this system has meant that apparently the stock held at 1st January, 1953 (calculated on the old system) was of much greater value than the stock which remained at 31st December, 1953 (calculated on the new system). In consequence, the cost of publications appears to be unduly large, and would, in fact, if the stock position were ignored, amount to £18,962 instead of the £21,336 shown in the account. Although some adjustment would have to be made to this figure in respect of the fluctuating value of the stock of publications, yet it is interesting to note that the receipts from the sale of publications (£19,165) have almost the same value as the costs of publication. It does, therefore, appear that the main object of changing the financial system of the Society has been achieved, namely, to rid the Society of an incubus of a yearly loss, unpredictable in size, on the publications of the Society.

As the Fellowship will know, a reprint service has been offered by the Society and, although at the moment it is proving somewhat expensive to the Society, it is felt well worthwhile to give this new activity every chance to establish itself.

Science Abstracts

The new financial system has, of course, affected the position in regard to *Science Abstracts*. During the previous year, the provision of *Science Abstracts* to the Fellowship cost the Society over £2,500 and, during the year under review, this cost has been reduced approximately to £500, although it should be remarked that favourable circumstances have been partially responsible for the abnormally low expense.

Library

In the previous year, far more money was expended on the Library than had been the case for many years, and the fairly high rate of expenditure has continued during the year under review. The Library, now housed in the old and new Council Rooms of the Society, is becoming, both in appearance and in content, more and more worthy of the Society, and further progress should be made in this direction in the immediate future.

Exhibition

Once again the income accruing to the Society as a result of the publication of *The Handbook of Scientific Instruments and Apparatus* has been very considerable and has amounted to nearly £4,000. During the year it has been found possible to increase the reserves of the Society by the purchase of £4,000 worth of Funding Stock, and the equality of these two figures has some significance: in fact, the hopes expressed in writing of the Exhibition last year have been fulfilled, and it may well be that the future pattern of the finances of the Society will see the income derived from the Exhibition used to finance new endeavours rather than in supporting the normal activities of the Society.

Balance Sheet

The total assets of the Society at 31st December, 1953, amount to £36,678. The investments are shown at cost (1939 value) at £16,941; the market value of these at the end of 1953 was estimated to be £15,670. Of the value of these investments £3,765 relates to the Special Fund.

General

During the first year of operation of the new subscriptions and publications policy, the Society's Income and Expenditure account shows a favourable balance of £1,794. This balance has been achieved in spite of a marked depreciation which has been made in the value of the stocks of publications held by the Society. This happy state of affairs has only been made possible by the very loyal acceptance by the Fellowship of the new arrangements which have been made.

A. J. Philpot,
Honorary Treasurer.

6th April 1954

INCOME AND EXPENDITURE ACCOUN

Year to 31/12/52 £	EXPENDITURE	£	£
	To MEMBERSHIP EXPENDITURE:		
504	Agenda Papers, Notices and Expenses of Meetings	740	
58	Honoraria to Special Lecturers ..	26	
53	Audit and Accountancy Fee ..	53	
1,456	Salaries	2,107	
734	Office Expenses	1,113	
425	Postage	543	
3,230			4,582
	„ GROUP EXPENDITURE:		
233	Agenda Papers, Notices and Expenses of Meetings	265	
416	Salaries	230	
160	Office Expenses	121	
73	Postage	79	
882			695
	„ PUBLICATIONS:		
6,800	Stock, 1st January 1953	7,100	
11,467	"Proceedings"	9,469	
2,624	"Reports on Progress in Physics" ..	2,892	
—	Reprints	1,413	
122	Special Publications	337	
—	Bad Debts	5	
2,872	Salaries	2,691	
1,412	Office Expenses	1,421	
770	Postage	734	
25,767		26,062	
7,100	*Less:* Stock 31st December 1953 ..	4,726	
18,667			21,336
	„ SCIENCE ABSTRACTS:		
2,569	Payments re 1953 Budgeted Expenditure	1,675	
—	*Less*: Rebate re 1952	329	
2,569			1,346
	„ EXHIBITION:		
4,173	Expenses	4,795	
—	Bad Debts	85	
833	Salaries	734	
319	Office Expenses	388	
108	Postage	99	
5,433			6,101
	„ LIBRARY EXPENDITURE:		
492	Expansion	270	
	Periodicals and Books .. 591		
242	*Less*: Sales thereof .. 344		
		247	
250	Salaries	134	
83	Office Expenses	71	
1,067			722
—	Transfer to Optical Group—Special Fund		115
	„ GRANTS:		
126	Holweck Trust		102
	„ Balance, being excess of Income over Expenditure, carried to Accumulated Fund		
2,573			1,622
£34,547			£36,621

Note: The stock of publications on 31st December, 1953 has been valued at cost for publications issued during the two years prior to that date: no value has been placed on earlier publications. On the same basis the stock on the 1st January would have been valued at £3,462.

OR THE YEAR ENDED 31ST DECEMBER 1953

Year to 31/12/52 £	INCOME	£	£
	By MEMBERS' SUBSCRIPTIONS:		
81	Entrance Fees	78	
4,910	Fellows	3,476	
240	Students	113	
5,231			3,667
	,, GROUP SUBSCRIPTIONS:		
36	Colour Group	43	
109	Optical Group	96	
64	Low Temperature Group	50	
114	Acoustics Group	108	
323			297
	,, PUBLICATIONS:		
	"Proceedings":		
193	Volume for preceding year and Sundry Parts	796	
10,435	Volume for current year	11,799	
1,129	Reprints	1,028	
11,757		13,623	
	"Reports on Progress in Physics"		
	Volumes for preceding years 1,406		
3,744	Volume for current year 2,849		
		4,255	
484	Advertisement in "Proceedings" ..	717	
519	Special Publications	570	
16,504			19,165
	,, SCIENCE ABSTRACTS:		
—	Receipts		853
	,, EXHIBITION:		
9,464	Receipts		10,015
	,, GRANTS FROM ROYAL SOCIETY:		
2,000	Publications Grant in respect of 1953	1,750	
500	Additional Library Grant for expansion in respect of 1952	200	
2,500			1,950
	,, GRANTS FROM OTHER BODIES:		
59	London Conference on Optical Instruments		56
435	,, Interest on Investments		571
	,, Transfer from Life Membership Fund		
31	Amounts paid by Fellows now deceased		47
£34,547			£36,621

BALANCE SHEET AS C

1952	LIABILITIES	£	£
£			
	ACCUMULATED FUND:		
16,606	As on 31st December 1952 (General Fund) ..	19,438	
259	*Add:* Transfer–W. F. Stanley Trust Fund..	—	
2,573	*Add:* Balance of Income and Expenditure Account	1,622	
19,438			21,060
	APPEAL FUND:		
3,390	As on 31st December 1952	4,888	
1,498	*Add:* Further Contributions received and due	469	
4,888			5,357
			26,417
	LIFE COMPOSITIONS:		
2,330	As on 31st December 1952	2,299	
—	*Add:* Subscriptions received during the year	18	
2,330		2,317	
31	*Less:* Transfer to Income and Expenditure Account	47	
2,299			2,270
	SPECIAL FUNDS:		
385	Duddell Memorial Trust Fund	391	
1,940	Charles Chree Medal and Prize Fund	1,871	
889	Charles Vernon Boys Prize Fund	889	
150	Holweck Prize Fund	100	
402	Addenbrooke Bequest	387	
192	Silvanus P. Thompson Memorial Fund ..	193	
3,958			3,831
	SUBSCRIPTIONS IN ADVANCE:		
1,542	Members	1,216	
3,601	Publications	3,304	
5,143			4,520
1,251	SUNDRY CREDITORS		951

(*Signed*) R. WHIDDINGTON. } *Members of Council.*
C. G. WYNNE. }

Note: This Balance Sheet does not include the value of the contents of the Society's Library or the office furniture.

REPORT OF THE AUDITORS TO THE MEMBERS OF THE PHYSICAL SOCIETY

We have obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purposes of our audit. In our opinion proper books of account have been kept by the Society so far as appears from our examination of those books. We have examined the above Balance Sheet and annexed Income and Expenditure Account, which are in agreement with the books of account. In our opinion and to the best of our information and according to the explanations given us the said accounts give the information required by the Companies Act, 1948, in the manner so required, and the Balance Sheet gives a true and fair view of the state of the Society's affairs as at 31st December 1953, and the Income and Expenditure Account gives a true and fair view of the excess of income over expenditure for the year ended on that date.

Spencer House, South Place,
London, E.C.2.
10th *February* 1954.

KNOX, CROPPER & CO.,
Chartered Accountants

£36,977		£37,989

...er DECEMBER 1953

1952	ASSETS	£	£
	QUOTED INVESTMENTS:		
	ACCUMULATED FUND:		
1,438	£2,100 2½% Consols	1,438	
1,636	£1,750 3½% War Stock	1,636	
2,725	£2,775 3% Defence Bonds	2,775	
535	£500 4% Funding Stock 1960/90 ..	535	
1,792	£2,468 0s. 4d. 3% British Transport Stock 1977/88	1,792	
1,000	£1,000 3½% Defence Bonds	1,000	
—	£4,425 18s. 6d. 3% Funding Stock 1959/69	4,000	
9,126			13,176
	SPECIAL FUNDS:		
	Duddell Memorial Trust Fund:		
374	£400 3½% War Stock	374	
	Charles Chree Medal and Prize Fund:		
	£784 4% Funding Stock 1960/90 839		
	£1,500 2½% Consols .. 1,027		
1,866		1,866	
	Charles Vernon Boys Prize Fund		
900	£1,132 16s. 10d. 2½% Consols ..	900	
	Holweck Prize Fund:		
150	£100 3% Defence Bonds	100	
	Addenbrooke Bequest:		
337	£384 6s. 7d. 2½% Consols	337	
	Silvanus P. Thompson Memorial Fund:		
	£55 3% Defence Bonds .. 55		
	£133 2s. 4d. 3½% War Stock 133		
188		188	
3,815		3,765	
143	CASH AT BANK: Deposit Account Post Office Savings Bank	66	
3,958			3,831
	(Investments 31st December 1953—Cost or 1939 value £16,941—Market value £16,670.)		
80	DIVIDENDS DUE ON INVESTMENTS ..		102
	INLAND REVENUE—Income Tax Recoverable		151
577	SUBSCRIPTIONS DUE		473
176	SUNDRY DEBTORS:		
	Publications etc	6,287	
1,711	Payments in Advance	91	
168			
1,879			6,378
	STOCKS:		
2,262	Paper at cost	1,795	
7,100	Publications, at cost (see note) ..	4,726	
9,362			6,521
	CASH AT BANK:		
	Deposit Account, Westminster		
5,000	Bank Ltd. 5,000		
	Less Current Account Westminster Bank Ltd. overdrawn 879		
4,607		4,121	
	Deposit Account Post Office Savings		
1,665	Bank	2,152	
	Deposit Account, Trustee Savings		
504	Bank	1,026	
11,776			7,299
43	CASH IN HAND		58
£36,977			£37,989

DETAILS OF SPECIAL FUNDS, 31st DECEMBER 1953

	As at 31/12/52 Capital	As at 31/12/52 Revenue	Investment Income for year	Expenses for year	As at 31/12/53 Capital	As at 31/12/53 Revenue
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Duddell Memorial Trust Fund	374 0 0	10 14 1	14 0 0	7 5 0	374 0 0	17 9 1
Charles Chree Medal and Prize Fund	1,866 10 0	73 19 0	68 17 2	138 10 0	1,866 10 0	4 6 2
Charles Vernon Boys Prize Fund	900 0 0	Def. *10 4 7*	28 6 4	28 16 0	900 0 0	Def. *10 14 3*
Holweck Prize Fund	150 0 0	– – –	7 10 0 *102 2 11	159 12 11	100 0 0	– – –
Addenbrooke Bequest	337 0 0	64 13 0	9 12 0	24 12 6	337 0 0	49 12 6
Silvanus P. Thompson Prize	188 2 4	3 14 10	6 6 2	5 5 0	188 2 4	4 16 0
	£3,815 12 4	£142 16 4	£236 14 7	£364 1 5	£3,765 12 4	£65 9 6

* Grant from Physical Society Accumulated Fund.

TRUST EXPENSES FOR THE YEAR

	£ s. d.	£ s. d.
Duddell Memorial Trust Fund :		
Medal 1952 under provision	4 0	
Medal 1953	6 0 0	
Certificate	1 1 0	
		7 5 0
Charles Chree Medal and Prize Fund :		
Medal	6 0 0	
Prize	131 5 0	
Certificate	1 5 0	
		138 10 0
Charles Vernon Boys Prize Fund :		
Prize	26 5 0	
Certificate	2 11 0	
		28 16 0
Holweck Prize Fund :		
Prize	100 0 0	
Certificate	9 9 0	
Expenses	50 3 11	
		159 12 11
Addenbrooke Bequest :		
Expenses		24 12 6
Silvanus P. Thompson Prize Fund :		
Prize		5 5 0
		£364 1 5

THE PROCEEDINGS OF
THE PHYSICAL SOCIETY

Section B

EDITORIAL

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